List of Patterns, &c.

BELONGING TO THE

SOUTH-BOSTON IRON COMPANY;

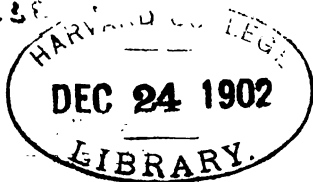
CYRUS ALGER AND OTHERS,

Proprietors.

REVISED AND CORRECTED, WITH ADDITIONS MADE, TO MARCH 1, 1858.

FOUNDRY AND MACHINE-SHOP, — SOUTH BOSTON.

OFFICE, — HEAD OF CENTRAL WHARF.

BOSTON:
PRINTED BY JOHN WILSON AND SON,
22, SCHOOL STREET.
1858.

☞ In all orders by letter for Geers or Pulleys, be pleased to copy the dimensions entire from the Pattern Book, and remember to give the sizes of holes to be cast or bored.

SOUTH-BOSTON IRON COMPANY.

The South-Boston Iron Company is prepared to furnish Castings of every description, at the shortest notice, and on the most favorable terms.

Their large stock of Patterns comprises a general assortment of Geering, Pulleys, Hangers, Pillow Blocks, Flanches, Spiders, Gudgeons, Cranks, Shafts, and Couplings; together with a great variety of miscellaneous patterns adapted to the wants of Machinists, Millwrights, Manufacturers, &c.

They are prepared to furnish all new patterns that may be required, at a reasonable cost; their facilities and experience in this department being unsurpassed by any other establishment.

Particular attention will be given to the manufacture of Steam Engine Castings, Hydrostatic Presses, Stills for the distillation of Pine or Resin Oil, Chilled and Dry Sand Rolls, Bark Mills, Plaster Crackers, Sugar Mills, &c.

Large Kettles, from 100 to 1500 gallons, and of any form required, made at short notice; also Curbs for the same, for the use of Soap Boilers and others. Sugar Pans and Oil Kettles, of all sizes; also Kettles for calcining plaster, of 160 gallons, cast bottom down. Cylinders for Paper Manufacturers, Powder Works, or any other purpose, of any size that may be wanted, from one foot to fifteen feet in diameter. An assortment of Soap Kettles, &c., usually kept on hand.

They have also a Machine Shop attached to the Foundry, where all kinds of Boring and Turning, including wrought iron and blacksmith's work, are executed with promptness. When desired, estimates are furnished for heavy machinery for Rolling Mills, and the same furnished and set up in the best manner.

For expensive and heavy Shafts, Cranks,

Presses, Rolls, Hammers, Dies, and a great variety of other Castings, it is often very desirable to secure an extra quality of iron. When desired, these are made of "gun-metal," at a small additional cost, with the advantage of nearly double the strength of ordinary castings.

They would call the attention of Iron Manufacturers to James Watt's Patent Steam Forge Hammers, comprising 500 lbs., 1,500 lbs., 2,000 lbs., and 3,000 lbs. weight of hammer. These have been proved superior to all other hammers, in point of economy of cost, and power; and are superseding all others for the manufacture of Railroad Work, Shafts, and indeed all kinds of forging within their capability. They are constructed in the most thorough manner, and furnished so complete as to require only a proper foundation and connection with the steam-boilers to be put into immediate operation.

Composition Castings and Bronze Cannon will be furnished at short notice. These guns, intended for Merchantmen or Steamers to give notice of arrival or departure, as well as for

defence if occasion should require, are of various calibers, — usually 4, 6, 9, and 12 pounders. They are attached to carriages; and are furnished with percussion-locks, and all the usual equipments for service.

Iron Cannon of various calibers, with Carriages for the same, designed for ships or fortifications, including Shot, Shell, Shrapnell, Canister, Grape-shot, Percussion Caps, Fuses, &c., will be supplied at short notice.

The late Cyrus Alger, who for many years was the senior member of this firm, made many improvements in the metallurgy of iron; and, by a process suggested and manipulated by himself, was enabled to increase the strength of certain kinds of pig-iron, from its normal tenacity of 12,000 lbs. to the square inch, to that of 35,000 lbs., — thus particularly adapting it to the fabrication of Cannon, as well as for machinery requiring great strength. When, therefore, we may be requested to furnish "gun-metal," the applicant will readily understand what he is to receive; and he may feel safe in substituting

this iron, in many cases, in place of wrought iron: for, if a comparison may be drawn between its capability of resisting instantaneous shocks, and its power of withstanding a gradual strain or tension, Steamboat and other heavy Shafting, Cranks, &c., may be made from iron thus prepared; as it is well known that the heavy wrought-iron guns made to supersede those of cast-iron failed to maintain an equal amount of endurance, on a fair comparison of the respective weight of each. It may not be amiss to state, that the *first* of the large cannon of 10, 11, and 12 inch caliber, made by order of the United-States Government for the Army and Navy, were cast at this establishment, under the immediate direction of Mr. Alger, and from iron of his own selection, and prepared by his own process. One of these guns, of 11 inches caliber, carrying a solid shot of 170 lbs., or a shell of 135 lbs., was first fired six hundred and fifty-five times with the former projectile, and thirteen hundred and six times with the latter, — an enormous endurance of nineteen hundred and fifty-nine

rounds before it failed, — far exceeding any other gun of equal size of which any knowledge has come to us from the Ordnance Reports of this or any other country. Com. Dahlgren well said of this gun, "that it had shown all that could be required of it, and very much more."

A constant supply of the following articles, among many others, kept on hand:—

Potash Kettles
Caldrons, 15 to 75 galls.
Bark Mills
Corn Crackers
Door Scrapers
Hawser Pipes
Chain Deck Pipes
Stove Deck Pipes
Tire Benders
Forge Backs
Oven Doors
Ash Doors
Boiler Doors
Do. Grates
Grate Bars, 12 to 36 inches
Cylinder Stoves
Frames and Grates
Basket Grates
Cesspools
Travellers
Grindstone Cranks
Friction Rollers for do.
Hoisting Wheels and Pinions
Lathe Wheels
Lathe Puppets
Rests and T's for do.
Windlass Boxes
Truck Wheels
Dumb Bells
Wing Gudgeons
Saw Mill Cranks
Fulling Mill do.
Rollers for Doors

Barrow's celebrated Cooking Ranges, three sizes, constantly on hand.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
536	5		4	47	12
537	3	½	"	29	12
538	6		"	57	12
539	4	6	3⅝	48	8
589	2	3¾	"	24	7
540	6	8¾	3½	72	10
541	2	10½	"	31	7½

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
483	21	7½	3¼	256	9	16 segmt.
484	10		”	117	9	
542	6	6	”	76	9	
543	5	5	”	63	10	
544	4	4⅛	”	50	9	
545	3	7½	”	42	9	
546	3	4½	”	39	10	
485	2	11¾	”	35	9	
547	2	8½	”	31	10	
548	2	3⅜	”	26	9	
482	1	7¾	”	19	9	
635	1	¾	”	12	9⅝	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
223	2		3⅛	24	7½
218	1	10⅜	,,	22	3⅝
224		10½	,,	11	7½
657	2	2	3	27	7
621	3	5⅛	,,	43	6
220	3	1	,,	39	5½
221	2	9¼	,,	35	5½
550	2	7⅝	,,	33	6
442	2	4	,,	29	5½
222	2	1⅝	,,	27	5½
193	1	10¾	,,	24	6½
551	6	4½	,,	80	4½
552	3	5½	,,	44	3½ mortise.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
1	20		$2\frac{7}{8}$	220	7	24 segmt.
2	5	$11\frac{5}{8}$	"	78	7	
3	2	$11\frac{1}{2}$	"	39	7	
4	2	$4\frac{3}{8}$	"	31	7	
5	20		"	220	6	24 segmt.
6	4	$1\frac{3}{4}$	"	54	5	mortise.
27	24	$4\frac{1}{2}$	"	323	7	{ 11 segmt. 14 cogs. 13 do. 13 do.
486	1	$6\frac{3}{8}$	"	20	7	
554	1	$5\frac{1}{2}$	"	19	7	
7	6	$6\frac{3}{4}$	$2\frac{13}{16}$	88	$6\frac{3}{8}$	
8	3		"	40	$6\frac{3}{8}$	
9	2	$\frac{1}{4}$	"	27	$6\frac{1}{2}$	
10	1	$6\frac{7}{8}$	"	21	$6\frac{3}{8}$	
11	1	$5\frac{3}{16}$	"	19	$6\frac{3}{8}$	
12	10	8	"	144	6	16 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
13	6	6⅝	2 13/16	88	5	mortise.
453	10		,,	137	6½	5 segmt. 12 cogs. 7 do. 11 do.
660	24	2	2¾	340	8	20 segmt.
636	2	⅜	,,	28	8	
74	19		,,	360	8	20 segmt.
18	12		,,	165	7½	15 segmt.
16	9	8	,,	132	8	12 segmt.
17	4	7¾	,,	64	8	
555	4		,,	54	6¼	
75	2		,,	27	8	
21	1	11¾	,,	27	7⅜	
73	1	10	,,	25	6	
22	1	9¼	,,	24	6	
15	1	8	,,	23	4¼	
556	1	5¾	,,	20	7	To run with mortise.
487	1	½	,,	14	8½	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
25	1	½	2¾	14	4¾
557	2	9¾	”	38	6
627	1	11	”	26	7
549	5	6⅜	”	76	5¼ mortise.
26	2		2 11/16	28	5
71	2		”	28	7
61		10⅞	2⅝	13	3½
62	1	9½	”	26	3½
63	1	8	”	24	5
64	1	8	”	24	5

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
65	13	10½	2⅝	201	7	{9 segmt. 13 cogs. {7 do. 12 do.
67	10		,,	144	7	8 segmt.
76	2	4	,,	34	7	
437	1	10½	,,	27	11	
436	14	2	,,	208	11	16 segmt.
446	18	5½	,,	264	7	24 segmt.
54	4	2	,,	60	6	
32	13	4¾		192	6¼	16 segmt.
448	20		2 9/16	300	7	20 segmt.
28	13		,,	192	7	16 segmt.
53	5	8¾	,,	84	5	
562	1	10⅛	,,	27	4	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
78	1	8½	2 9/16	25	7	
29	1	8⅝	,,	25	7	
56	1	1½	,,	17	4¾	
565		10	,,	12	6	
57		8⅜	,,	10	4	
566		11¾	,,	14	5	
567	2	1	,,	30	4	
568	2	1¾	,,	31	4	
569	1	11	,,	28	5	
570	1	9½	,,	26	4	
571	1	8½	,,	25	4	
633	2		,,	29	4	
634	2	2⅝	,,	32	4¾	
645	1	¼	,,	15	4	
663	12	10½	,,	178	5	{ 14 segmt. 11 cogs. 2 do. 12 do.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
35	2	10	2½	42	7	
36	1	¾	,,	16	5¼	
37	16	2	,,	242	4⅛	22 segmt.
39	1	7⅝	,,	24	3⅞	
30	18	1¾	,,	272	5½	16 segmt.
31	2	¼	,,	30	5½	
34	18	1	,,	272	7	16 segmt.
40	2	2½	,,	33	5½	pinions for mortise wheels.
41	1	4	,,	20	5½	
42	1	1¾	,,	17	5	
43	4	5	,,	66	5	mortise.
44	17	2	,,	256	7¼	16 segmt.
45	2	10¾	,,	43	7¼	
46	15	10½	,,	240	7	16 segmt.
47	2	¼	,,	30	7	
48	11	6	,,	176	5	16 segmt.
49	1	7	,,	24	5	
50	21		,,	312	8½	24 segmt.
51	2	¾	,,	31	8½	
52	4	6½	,,	68	6	
395	3	2	,,	48	6½	
396	1		,,	15	7	
397		11	,,	14	7½	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
398	1	2¼	2½	18	8	
399	10		,,	152	5½	8 segmt.
400	7		,,	108	6	
58	4	11	,,	76	4¾	{ 4 segmt. 18 cogs. 2 do. 12 do.
66	21	7	,,	320	7	16 segmt.
68	18		,,	272	6	16 segmt.
70	9	2	,,	140	5	{ 8 segmt. 12 cogs. 4 do. 11 do.
69	18		,,	272	7	16 segmt.
72	2		,,	30	7	
77	1	8	,,	25	7	
79	3	10	,,	58	6	
488	2	4½	,,	36	6	
490	1	11¼	,,	29	5½	{ To run with mortise.
572	1	5¾	,,	22	5½	
573	1	2¼	,,	18	6½	
489	1	¼	,,	15	4	
574		8 5/16	,,	10	5	
575	3	6	,,	53	5¾	
631	1	8	,,	25	7	{ To run with mortise.
637	1	7¼	,,	25	7	
654	3		,,	52	7	
659	7		,,	107	7	{ 5 segmts. 13 cogs. 3 do. 14 do.
667	8		,,	120	4	8 segmt.
23	16	½	,,	240	7	16 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
81	18	1½	2 7/16	280	4	20 segmt.
87	17		,,	264	5½	24 segmt.
447	14	6½	,,	224	5½	16 segmt.
424	1	8	,,	26	6	
576	1	3 11/16	,,	20	5½	
463	12		,,	192	5⅛	12 segmt.
215	11	10	,,	186	6	{ 10 segmt. 12 cogs. 6 do. 11 do.
33	11	6	,,	176	5½	8 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
90	15		2⅜	240	6	16 segmt.
91	2	11¼	,,	47	6	
92	1		,,	16	6	
94	14		,,	224	5	16 segmt.
95	11	6	,,	192	4	12 segmt.
96	2	1⅜	,,	33	5⅞	
97	9		,,	143	6	16 segmt.
99	4	1½	,,	66	6	
100	1	4½	,,	22	6	
101	12	1½	,,	192	5¼	
102	1	6⅜	,,	24	5½	
103	2		,,	32	5½	
104	15	10½	,,	156	4	16 segmt.
105	1	4½	,,	22	4	
106	8	1½	,,	130	5½	10 segmt.
420	1	7½	,,	26	6	
421	24	1½	,,	384	7	24 segmt.
422	1	4¾	,,	22	7	
418	5	7¼	,,	86	5	{ 6 segmt. 11 cogs. 2 do. 10 do.
419	23	10	,,	382	5½	{ 30 segmt. 12 cogs. 2 do. 11 do.
89	17		,,	272	6½	16 segmt.
88	9	9	,,	156	5½	12 segmt.
86	20		,,	321	5½	{ 9 segmt. 14 cogs. 15 do. 13 do.
85	13	2	,,	216	6	{ 16 segmt. 11 cogs. 4 do. 10 do.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
84	5	4½	2⅜	86	6	{ 7 segmt. 11 cogs. / 1 do. 9 do.
83	2	¼	,,	32	6½	
430	15		,,	262	5	{ 6 segmt. 17 cogs. / 10 do. 16 do.
429	9	7½	,,	156	6	12 segmt.
428	1	7½	,,	26	6	
82	1	4¾	,,	22	7	
449	24		,,	384	7	24 segmt.
501	12	3	,,	196	6½	{ 4 segmt. 17 cogs. / 8 do. 16 do.
656	1	5⅝	,,	23	5½	
653	3	1¼	,,	48	5½	
577	2	4⅛	,,	37	6½	
648		9½	,,	12	5½	
650	2	3¾	,,	37	6	
652	1	10½	,,	30	6	
661	24		,,	386	6	{ 22 segmt. 16 cogs. / 2 do. 17 do.
662	22	1¾	,,	352	6½	16 segmt.
20	18	4	,,	288	7	24 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
107	11	7	$2\frac{5}{16}$	192	$6\frac{1}{2}$	16 segmt.
108	1	$6\frac{1}{4}$	,,	25	$6\frac{1}{2}$	
110	16	$1\frac{1}{2}$	,,	264	5	24 segmt.
111	1	6	,,	24	5	
112	1		,,	16	5	
113		$8\frac{7}{8}$	,,	12	5	
114	11	$10\frac{5}{8}$	,,	194	5	{ 10 segmt. 16 cogs. { 2. do. 17 do.
578	16	$3\frac{3}{4}$	,,	266	$4\frac{1}{4}$	{ 10 segmt. 17 cogs. { 6 do. 16 do.
19	1	$10\frac{1}{4}$	,,	30	$5\frac{1}{4}$	
55	18	9	,,	306	$4\frac{1}{4}$	18 segmts.
124	1	$10\frac{3}{4}$	$2\frac{1}{4}$	32	$5\frac{1}{2}$	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
125	15	10¾	2¼	270	5½	18 segmt.
126	2	4½	,,	39	5	
128	13	9	,,	228	4½	19 segmt.
129	1	8½	,,	28	5	
130	8	6	,,	144	4⅞	12 segmt.
133	1	⅜	,,	17	12	pinions for rolling-mills.
134		11½	,,	16	12	
135	28		,,	432	7	24 segmt.
136	17		,,	288	7	16 segmt.
137	20		,,	336	7	24 segmt.
138	7	10½	,,	132	5½	11 segmt.
139	3	4¼	,,	57	7	
140	2	9	,,	47	7	
141	2	11¾	,,	50	5½	
143	2	5¼	,,	41	7	
144	1	9½	,,	31	7	
145	2	1½	,,	36	7	
146		9¼	,,	13	7	
147	1	3¾	,,	22	5½	
149	15		,,	256	5	16 segmt.
123	12		,,	201	5½	12 segmt. 14 cogs. 8 do. 11 do.
122	16		,,	256	5½	16 segmt.
121	10		,,	168	5½	8 segmt.
120	2	4	,,	38	5	
438	1	7½	,,	27	5	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
450	19		2¼	320	7	16 segmt.
451	18	2	"	304	5½	16 segmt.
491	2	1⅞	"	36	7	
492	32	1	"	539	7	35 segmt. 15 cogs. 1 do. 14 do.
579	19	9¾	"	336	5½	24 segmt.
581	10		"	168	7	8 segmt. 10 cogs. 8 do. 11 do.
582	1	8½	"	28	5	
624	2	1¾	"	36	7	
638	1	10	"	31	5	
649		8⅛	"	11	5¼	
217	7	1½	"	120	5	12 segmt.
24	17	4⅜	"	288	8	16 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
481	9	4	$2\frac{3}{16}$	160	$5\frac{1}{2}$	{ 4 segmt. 14 cogs. 8 do. 13 do.
493	3	$8\frac{1}{4}$	”	65	$4\frac{1}{2}$	mortise.
142	1	$3\frac{1}{4}$	”	39	$4\frac{1}{2}$	mortise.
668	6	9	$2\frac{1}{8}$	120	4	8 segmt.
666	17	$10\frac{3}{4}$	”	322	$4\frac{1}{2}$	{ 18 segmt. 16 cogs. 2 do. 17 do.
655	2	$9\frac{3}{4}$	”	49	5	
632		$10\frac{1}{8}$	”	15	6	
583	12	4	”	216	5	{ 8 segmt. 14 cogs. 8 do. 13 do.
584	1	$9\frac{7}{8}$	”	32	4	
585	1	$7\frac{1}{4}$	”	28	4	
586	1	$\frac{1}{4}$	”	18	4	
587	3	$8\frac{1}{2}$	”	65	4	mortise.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
622	4	$2\frac{1}{4}$	$2\frac{1}{8}$	73	4	
623		7	”	10	5	
651	1	6	”	26	4	
109	2	9	”	48	5	
535	1	$6\frac{3}{8}$	”	27	4	
431	15	$10\frac{1}{2}$	”	283	4	{ 11 segmt. 18 cogs. { 5 do. 17 do.
494	3	1	”	54	4	mortise.
150	6	$10\frac{5}{8}$	”	120	4	
151	5	$4\frac{1}{2}$	”	94	4	
152	3	$8\frac{1}{2}$	”	65	4	
153	2	$7\frac{1}{2}$	”	46	4	
154	2	$\frac{5}{8}$	”	36	4	
155	2		”	35	4	
156	1	$1\frac{1}{8}$	”	19	4	
157		11	”	16	$3\frac{5}{8}$	
158		9	”	13	5	
159	12	$10\frac{1}{2}$	”	224	$3\frac{1}{2}$	16 segmt.
160	20		”	352	4	32 segmt.
161	13	8	”	240	4	16 segmt.
162	11	10	”	213	4	16 segmt.
163	10		”	180	4	12 segmt.
164	14		”	252	4	{ 12 segmt. 16 cogs. { 4 do. 15 do.
166	11	2	”	192	$5\frac{1}{4}$	16 segmt.
167	10		”	180	5	12 segmt.
168	11		”	198	5	18 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
169	2	1	$2\frac{1}{8}$	37	5	
170	1	$5\frac{3}{4}$	,,	26	5	
171	7	$10\frac{1}{2}$	,,	140	4	10 segmt.
172		11	,,	16	$4\frac{1}{4}$	
173	4	8	,,	83	4	{ 3 segmt. 11 cogs. { 5 do. 10 do.
174	6		,,	105	4	7 segmt.
182	10	$10\frac{3}{4}$	,,	195	5	{ 3 segmt. 13 cogs. { 13 do. 12 do.
183	8	$1\frac{1}{2}$	,,	144	5	8 segmt.
184	5	4	,,	94	4	{ 6 segmt. 12 cogs. { 2 do. 11 do.
185	15		,,	265	4	{ 15 segmt. 17 cogs. { 1 do. 16 do.
186	5	$11\frac{1}{2}$	,,	106	4	{ 2 segmt. 14 cogs. { 6 do. 13 do.
187	2	5	,,	43	5	
115	2	$3\frac{1}{2}$	,,	41	5	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
175	11	10½	2	228	4⅛	12 segmt.
176	10	1	,,	192	4	12 segmt.
177	7		,,	132	4	12 segmt.
178	1	6⅜	,,	29	4⅛	
180		11	,,	17	7	
181	14	1½	,,	256	5	16 segmt.
116	3	1¼	,,	59	5½	
444	2	2½	,,	42	5½	
443	5		,,	96	4½	mortise.
445	11		,,	208	6	16 segmt.
495	2	¼	,,	38	5	mortise.
590	2	1	,,	39	6	
591	1	4⅞	,,	26	5⅜	To run with mortise.
625	1	5⅛	,,	27	6	To run with mortise.
628	1	¾	,,	20	4	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
188	7	2	1⅞	144	2¾	8 segmt.
189		9⅝	"	16	3	
561		5	1¾	9	5	
563	1	4¼	"	29	7	
564		7¾	"	14	7	
195	14		"	304	4	16 segmt.
196	11	6	"	252	3¾	18 segmt.
197	11	4	"	252	5	12 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
198	9	10	$1\frac{3}{4}$	216	4	18 segmt.
199	5		„	108	4	6 segmt.
200	4	$11\frac{5}{8}$	„	108	$4\frac{3}{4}$	
201	3	$4\frac{1}{4}$	„	73	$4\frac{3}{4}$	
202	1	$6\frac{7}{8}$	„	34	4	
203	1	$5\frac{5}{8}$	„	32	$5\frac{1}{4}$	
204	1	$1\frac{7}{8}$	„	25	$4\frac{1}{8}$	
205		10	„	18	$4\frac{3}{4}$	
206	1	$7\frac{7}{8}$	„	36	$3\frac{1}{8}$	
207	7	6	„	160	$3\frac{5}{8}$	10 segmt.
208	8	6	„	187	$3\frac{1}{2}$	11 segmt.
209	8		„	176	4	16 segmt.
210	1	$1\frac{1}{2}$	„	24	$3\frac{5}{8}$	
211	1	$1\frac{1}{2}$	„	25	4	
212	10	10	„	234	5	18 segmt.
213	6	1	„	132	7	
214	1	2	„	25	7	
194	1	$\frac{1}{4}$	„	22	7	
192		$7\frac{1}{2}$	„	14	7	
191	1	5	„	31	$4\frac{1}{2}$	
190		$9\frac{1}{2}$	„	17	4	
119		$7\frac{3}{4}$	„	14	4	
118		6	„	11	4	
434	4		„	86	4	
433	1	$\frac{1}{4}$	„	22	4	
432	3	$\frac{1}{4}$	„	65	4	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
427	2	$\frac{1}{4}$	$1\frac{3}{4}$	43	4	
426	2	$5\frac{1}{4}$	,,	53	$4\frac{3}{4}$	
441	9	5	,,	204	$3\frac{1}{2}$	12 segmt.
496	1	$8\frac{1}{2}$	,,	37	4	
504		$11\frac{7}{8}$	,,	21	4	
592	4		,,	86	4	mortise.
593	3	1	,,	66	$4\frac{1}{2}$	mortise.
594	12	$1\frac{1}{2}$	,,	264	4	{ 8 segmt. 16 cogs. 8 do. 17 do.
595	3	$6\frac{1}{2}$	,,	76	$4\frac{3}{4}$	
596	1	8	,,	36	$4\frac{1}{8}$	
597	3	$1\frac{7}{8}$	,,	68	7	
598		$8\frac{7}{8}$	,,	16	$4\frac{5}{8}$	
599		$10\frac{3}{4}$	,,	19	4	
600	1	$8\frac{3}{8}$	,,	36	$5\frac{1}{4}$	{ To run with mortise.
646		10	,,	18	5	
647		$5\frac{5}{8}$	,,	10	4	
664	10	2	,,	222	5	{ 6 segmt. 19 cogs. 6 do. 18 do.
38	7	$5\frac{1}{2}$	,,	160	$4\frac{3}{4}$	10 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
225	7	6	1⅝	174	5
226	1		,,	23	5
227	1	1	,,	25	5
553	1	9⅝	,,	42	6

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
440	2		$1\frac{9}{16}$	48	3	
439	6	11	,,	128	3	12 segmt.
232	12	$1\frac{1}{2}$	$1\frac{1}{2}$	288	3	18 segmt.
233	11		,,	272	$3\frac{1}{2}$	16 segmt.
234	5	10	,,	144	3	12 segmt.
235	10	$2\frac{1}{2}$	,,	256	3	16 segmt.
236	3	7	,,	89	3	
237	2	6	,,	62	3	
238	2	$2\frac{1}{8}$	,,	54	3	
239	1	6	,,	37	3	
240		$8\frac{1}{2}$	,,	18	$3\frac{1}{8}$	
241		$8\frac{1}{4}$	,,	17	$3\frac{1}{4}$	
242		$7\frac{3}{8}$	,,	15	$3\frac{1}{4}$	
243	7		,,	180	$2\frac{3}{4}$	12 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
244		$6\frac{1}{8}$	$1\frac{1}{2}$	13	$3\frac{1}{4}$	
245		$5\frac{7}{8}$	,,	12	$3\frac{1}{2}$	
246	1	3	,,	31	3	
247	6		,,	152	$4\frac{1}{2}$	
248	5		,,	128	$4\frac{1}{2}$	
249	8	$4\frac{1}{2}$	,,	216	4	12 segmt.
250	10		,,	252	$3\frac{1}{4}$	12 segmt.
251	7	4	,,	192	$3\frac{3}{8}$	12 segmt.
252	5	10	,,	140	$3\frac{1}{4}$	{ 7 segmt. 18 cogs. 1 do. 14 do.
253	3		,,	75	$4\frac{1}{2}$	
254	1	8	,,	42	$4\frac{1}{2}$	
255	1	6	,,	38	$4\frac{1}{2}$	
401		9	,,	20	$4\frac{1}{2}$	
402	1		,,	25	$4\frac{1}{2}$	
403		$7\frac{1}{8}$	,,	15	$4\frac{1}{2}$	
404	2		,,	50	$3\frac{1}{4}$	
405	4	$4\frac{1}{2}$	,,	110	$3\frac{1}{4}$	
406	3		,,	75	$3\frac{1}{4}$	
407	1	$2\frac{3}{8}$	,,	30	$3\frac{1}{4}$	
408	1		,,	25	$3\frac{1}{4}$	
409		$8\frac{5}{8}$	,,	18	$3\frac{1}{4}$	
410		$5\frac{7}{8}$	,,	12	$3\frac{1}{4}$	
257	25	9	,,	646	$3\frac{1}{4}$	38 segmt.
258	16	$\frac{1}{2}$	,,	408	3	24 segmt.
259	1	11	,,	48	$3\frac{1}{4}$	
284	4	$6\frac{3}{4}$	,,	115	$3\frac{1}{4}$	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
117	5	2¾	1½	130	3	
425	10	1	,,	240	3	16 segmt.
497		10⅛	,,	21	3¼	
601	2	10¼	,,	72	3¼	
505	1	8	,,	41	3¼	
604		5½	,,	11	3¼	
626		9½	,,	20	3½	
131	8	½	,,	204	2⅝	12 segmt.
629	1	1½	,,	26	3	
639		4½	,,	9	3¾	
665	23	5	,,	600	3¼	30 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
256	4	1¼	1⅜	96	3¼ mortise.
286	2	4⅝	1¼	71	2¾
287	1	7	,,	48	2¾
288	1	2⅜	,,	36	2¾
289	1	1½	,,	34	2¾
290	1	⅝	,,	32	2¾
291	1		,,	30	2¾
292		10¾	,,	28	2¾
293		10⅜	,,	26	2¾
294		9⅜	,,	24	2¾
295		8¾	,,	22	2¾
296		7⅛	,,	18	2¾
297		6¼	,,	16	2⅝

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
298		4¾	1¼	12	2¾
299		4½	,,	11	2⅞
300	1	2½	,,	38	1⅝
301		7½	,,	19	1⅝
302	2	6	,,	75	3¾
285	1	5½	,,	44	3¾
605	1	1⅛	,,	33	3½
606		9½	,,	24	3½
607	3	3⅞	,,	100	3⅞
608		11¾	,,	30	3½
609		6	,,	15	3¾
658	1	8⅛	,,	28	8

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
263	3		$1\frac{3}{16}$	96	3	
282	2	$\frac{1}{2}$	,,	65	$2\frac{1}{4}$	
499	1	$3\frac{5}{8}$	,,	42	3	
610		$4\frac{5}{8}$	,,	12	$2\frac{1}{2}$	
611		6	,,	16	$2\frac{1}{4}$	
283		$4\frac{1}{8}$	,,	11	$2\frac{1}{2}$	
630		$5\frac{1}{4}$	,,	14	3	
612	2	$\frac{1}{2}$	,,	65	3	mortise.
613		$7\frac{5}{8}$	,,	20	3	
614	1	6	,,	48	2	
498	1	10	,,	58	3	
262	3	$7\frac{3}{4}$	,,	116	3	
264	2	$1\frac{1}{2}$	,,	65	3	
265	1	8	,,	53	3	
266	1	6	,,	48	3	
267	1	2	,,	37	3	
268		$10\frac{1}{4}$	,,	27	3	
269		9	,,	24	3	
270		$6\frac{1}{8}$	,,	16	3	
271		$4\frac{1}{8}$	,,	10	$2\frac{3}{4}$	
272	19	6	,,	630	3	30 segmt.
273	1	4	,,	43	3	
274	1		,,	32	$2\frac{1}{4}$	
275		$7\frac{7}{8}$	,,	21	$2\frac{1}{4}$	
276		$4\frac{1}{4}$	,,	11	3	
277	2	$3\frac{3}{4}$	,,	78	$2\frac{5}{8}$	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
278		5⅝	1 3/16	16	3	
279		9¼	”	27	2¾	
280		8	”	21	3	
281		7	”	18	3	
228	3	4	”	106	3	
229	2	6	”	80	3	
230		11¾	”	31	3	
231		8	”	22	2½	
260	1	2½	”	39	2¼	
261	1	9½	”	60	2½	
219	27		”	864	3	36 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
304	1	6	$1\frac{1}{16}$	54	2
305	1		”	36	2
306	2		”	72	2
307	1	2	”	41	2
308		6	”	18	2
615	2	$1\frac{3}{4}$	”	75	2
616	1	10	”	66	2
336	1	8	”	58	2
309		8	”	24	2
641		5	”	15	2
642		7	”	20	$2\frac{1}{8}$

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
310	4	6	1	168	4½	6 segmt.
311	4	5	„	162	3½	6 segmt.
312	4		„	150	2¼	6 segmt.
313		8	„	25	4½	
314		8¼	„	25	3½	
315		4	„	12	3¾	
317		9¾	„	31	3	
318		9⅜	„	30	3	
319		6⅞	„	22	3	
320		4¾	„	15	3	
321		3⅝	„	11	3	
322	1	4	„	50	2¼	
323		8	„	25	2¼	
324		6¼	„	19	2¼	
325		4¼	„	13	2¼	
326	1	4⅛	„	52	1¼	
327		7	„	23	1¼	
328	2	7⅝	„	101	2¼	
329	2	¾	„	79	2¼	
330		7¾	„	25	2¼	
331		6⅛	„	20	2⅜	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
332		5	1	16	$2\frac{1}{4}$
411		$4\frac{1}{8}$	,,	13	$2\frac{1}{4}$
412		$3\frac{3}{16}$	,,	10	$2\frac{1}{4}$
335	2	$9\frac{3}{4}$	,,	103	2
617	3	3	,,	122	2
618	2	6	,,	94	$2\frac{1}{4}$
640		$11\frac{3}{4}$	,,	37	$2\frac{1}{4}$
644	1	$\frac{1}{2}$	,,	39	$2\frac{1}{4}$
390	2		$\frac{7}{8}$	87	2
382		10	,,	35	2
381		$4\frac{1}{2}$	,,	16	2
353		4	,,	15	2

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
333	1	$2\frac{3}{8}$	$\frac{13}{16}$	56	$1\frac{3}{16}$
334		$4\frac{3}{8}$	,,	17	$1\frac{3}{16}$
340	2	$\frac{1}{4}$	$\frac{3}{4}$	100	3
341	1	$\frac{1}{8}$	,,	50	3
342		$7\frac{1}{8}$	,,	33	3
343		$6\frac{5}{8}$	,,	27	3
344		$3\frac{7}{8}$	,,	16	3
345	3	$5\frac{3}{8}$	,,	169	2
346		$10\frac{1}{8}$	,,	41	2
347		$7\frac{1}{8}$	,,	29	2
348		$6\frac{3}{8}$	,,	26	2
349		$3\frac{1}{2}$	,,	14	2

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
350	2	5⅜	¾	120	1½
351	1	9¼	,,	87	1½
352	1	2⅝	,,	60	1½
354	1	⅜	,,	50	1½
355		10½	,,	43	1½
356		9¾	,,	40	1½
357		8¾	,,	36	1½
358		7⅞	,,	32	1½
359		5⅞	,,	25	1½
360		5⅜	,,	22	1½
361		4⅝	,,	19	1½
362		3⅝	,,	15	1½
363		3	,,	12	1½
364		2¼	,,	9	1½
365	2	¼	,,	98	1½
366		11⅞	,,	48	⅞
367		3½	,,	14	⅞
368		11	,,	48	1½
369		2⅞	,,	12	1¾
370		8¾	,,	36	1¼
371		5	,,	20	1⅜
372		3½	,,	14	1⅜
413		2⅞	,,	12	1½
339	1	6	,,	74	1½
502	2	2	,,	109	3
503		4⅝	,,	19	3

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
619	1	3	$\frac{3}{4}$	62	2
620		$7\frac{1}{2}$	,,	31	2
373	1	$2\frac{1}{2}$	$\frac{11}{16}$	64	1
374		3	,,	13	1
375	1	$5\frac{1}{2}$	$\frac{5}{8}$	88	2

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
376	1	3	5/8	75	2
377		5	,,	25	2
643		9 3/8	,,	47	2
383	1	2 5/8	9/16	80	1 1/4
384		2 1/16	,,	11	1 1/4
385	1	4 3/4	,,	96	1 1/4
386		4 1/8	,,	24	1 1/2
414		4	,,	24	1 1/2
415		3 1/8	,,	23	1 1/8
416		2 1/4	,,	13	1 3/4
417		2 1/8	,,	12	1 1/2
387		9 7/8	1/2	64	1 3/8

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
388		$6\frac{3}{4}$	$\frac{1}{2}$	44	$1\frac{3}{8}$
389		3	,,	19	$1\frac{5}{16}$
392		6	$\frac{3}{8}$	48	1
393		$4\frac{1}{4}$	,,	34	$1\frac{1}{4}$
394	1	$3\frac{1}{2}$	,,	126	$1\frac{1}{8}$
14		$9\frac{3}{4}$	$\frac{5}{16}$	90	$\frac{11}{16}$

No.	Diameter.	Pitch.	No. Cogs.	Length of Cogs.
	Ft. In.	Inches.		Inches.
	2	$1\frac{3}{16}$	65	3 right.
	2	,,	65	3 left.
	worms.	$4\frac{1}{2}$	diam.	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
207	5		4	48	9	
208	1	9	,,	16	9	
260	3	8	$3\frac{3}{4}$	39	$7\frac{1}{4}$	
261	2	7	,,	26	$7\frac{1}{4}$	
1	1	$5\frac{1}{4}$	3	18	$4\frac{1}{2}$	To run with wooden wheel of 54 cogs.
174	2		,,	25	$6\frac{3}{8}$	
173	9	7	,,	120	$6\frac{3}{8}$	12 segmt.
189	7	8	,,	96	$5\frac{5}{8}$	mortise.
190	2		,,	25	$5\frac{5}{8}$	
209	4	$2\frac{1}{4}$	,,	52	8	
210	3	$6\frac{1}{2}$	,,	44	8	

No.	Diameter. Ft.	In.	Pitch. Inches.	No. Cogs.	Length of Cogs. Inches.	
211	9	$7\frac{7}{8}$	3	120	$5\frac{1}{2}$	mortise.
212	2		,,	25	$5\frac{1}{2}$	
213	4	4	,,	54	6	
214	2	$9\frac{1}{2}$	,,	35	6	
203	5	$1\frac{1}{4}$	$2\frac{7}{8}$	66	6	
204	2	$\frac{1}{4}$	,,	26	6	
215	3	$\frac{3}{4}$	$2\frac{13}{16}$	41	6	
216	1	$6\frac{7}{8}$	,,	21	6	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
23	2	8	$2\frac{3}{4}$	36	6 }
24	3		„	41	6 }
2	3		„	41	6 mortise.
183	2	10	$2\frac{11}{16}$	40	6 }
182	6	$8\frac{1}{2}$	„	96	6 } 12 segmt.
176	3	1	$2\frac{5}{8}$	44	8 }
175	5	$\frac{5}{8}$	„	73	8 }

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
145	12		$2\frac{5}{8}$	176	$7\frac{5}{8}$	16 segmt.
146	3	$\frac{3}{8}$	”	45	$7\frac{5}{8}$	
147	8	10	”	128	7	16 segmt.
148	2	11	”	42	7	
201	3	$8\frac{1}{2}$	”	53	7	
202	2	$5\frac{1}{4}$	”	35	7	
217	8	10	”	128	7	8 segmt.
25	2		$2\frac{9}{16}$	29	7	
26	5	2	”	75	7	
32	2	7	”	37	7	
33	5	2	”	75	7	
185	3	$6\frac{1}{2}$	”	52	$7\frac{1}{2}$	
184	11	$4\frac{1}{2}$	”	170	$7\frac{1}{2}$	16 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
5	1	8	$2\frac{1}{2}$	25	$6\frac{1}{2}$	
6	9	11	,,	150	$6\frac{1}{2}$	6 segmt. 13 cogs. 6 do. 12 do.
7	4	$4\frac{1}{2}$	,,	66	$5\frac{1}{2}$	
8	1	4	,,	20	$5\frac{1}{2}$	
9	1	$4\frac{1}{2}$	,,	20	$6\frac{1}{2}$	
150	4	6	,,	68	5	mortise.
151	2	3	,,	34	5	
152	2	6	,,	38	5	
153	1	$6\frac{1}{2}$	,,	23	5	
101	3	7	,,	53	6	
102	2	4	,,	35	6	
50	2	$4\frac{1}{2}$	,,	36	6	
51	12	$9\frac{1}{2}$	,,	192	6	16 segmt.
15	3	$5\frac{1}{2}$	$2\frac{7}{16}$	53	$5\frac{1}{2}$	
16	11	3	,,	176	$5\frac{1}{2}$	16 segmt.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
11	3	9½	2⅜	60	6	
12	2	¼	,,	32	6	
13	3	6⅝	,,	56	7	
14	9	2	,,	154	7	16 segmt.
17	3	3½	,,	51	7¼	
18	10	3	,,	160	7¼	16 segmt.
19	2	4¾	,,	37	5½	
20	10		,,	156	5½	12 segmt.
21	3	½	,,	48	3	
22		10	,,	13	3	mortise.
218	5	5	,,	85	6	
219	2	1¼	,,	33	6	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
30	2	11½	$2\frac{5}{16}$	32	6	12 segmt.
31	8		,,	132	6	
36	3	1¼	2¼	52	5	16 segmt. mortise.
37	2	1	,,	35	5	
38	15	7	,,	156	5	
39	2	4	,,	38	5	
35	4	3½	,,	72	7	
34	1	9½	,,	30	7	
220	2	6	,,	42	4¾	
221	2	1	,,	34	4¾	
40	2	⅛	2⅛	36	4	12 segmt.
41	10		,,	180	4	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
46	1	6⅛	$2\frac{1}{16}$	27	4	12 segmt.
47	9		,,	168	4	
178	1	3¾	2	24	4½	6 segmt.
177	3	10½	,,	72	4½	
54	4	⅜	,,	76	5	mortise.
55	2	¼	,,	38	5	
56	3	4¾	,,	64	5	
57	2	6	,,	47	5	
58	4	10	,,	91	6	
95	1	7½	,,	30	6	
60	8	3	,,	156	5	12 segmt.
61	1	7¼	,,	30	5	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
53	3	$\frac{1}{4}$	2	56	5	mortise.
52	1	1	”	20	5	
222	3	$\frac{1}{4}$	”	56	5	
223	1	1	”	20	5	
70	1	8	”	32	6	
71	2	6	”	48	6	mortise.
42	1	$7\frac{3}{4}$	”	31	$5\frac{1}{2}$	
43	4	2	”	76	$5\frac{1}{2}$	mortise.
191	3	$\frac{3}{8}$	”	57	6	
192	2	8	”	50	6	
197	4	$8\frac{7}{8}$	”	88	7	mortise.
198	2	$5\frac{1}{8}$	”	45	7	
224	3	$1\frac{3}{4}$	”	60	7	mortise.
225	2	$5\frac{1}{2}$	”	46	7	
226	2	$3\frac{1}{2}$	”	42	5	
227	1	6	”	27	5	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
48	3	$3\frac{3}{4}$	$1\frac{15}{16}$	64	$3\frac{7}{8}$
49		10	,,	16	$3\frac{7}{8}$
62	1	$7\frac{1}{4}$	$1\frac{7}{8}$	32	$5\frac{1}{2}$
63	10	9	,,	216	$5\frac{1}{2}$ 18 segmt.
64	5	6	,,	110	4
65		8	,,	13	5
44	2	$2\frac{1}{4}$	,,	43	6
45	8	7	,,	171	6

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
180	1	4½	1 3/16	28	5	
179	4	½	,,	84	5	
199	4	9¾	1¾	102	5	mortise.
200	1	4⅜	,,	29	5	
193	5		,,	110	3¾	
194	1		,,	22	3¾	
68	3	5¾	,,	75	4¾	
69	1	6¾	,,	33	4¾	
232	3	6⅜	,,	75	4½	
233	1	2 3/16	,,	25	4½	
234	3	1	,,	66	5	mortise.
235	1	9½	,,	38	5	
236	3	1	,,	66	5	mortise.
237	1	6½	,,	33	5	
238	1	7	,,	33	4	
239	1	3½	,,	27	4	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
248	3	6½	1¾	75	4½
249	1		,,	21	4½
72	2		$1\frac{11}{16}$	44	3
73	1	5¾	,,	33	3

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
76	·3		1⅝	68	4	
77	1	5½	„	33	4	
78	1	7½	„	37	4	
79	2	10¼	„	66	3¾	
80	2	4⅝	„	55	3¾	
81	6	3½	„	144	3	8 segmt.
82		19¾	„	37	3	
195	2	8	„	62	5	
196	1	1	„	25	5	
205	1	10	„	42	3	
206		11	„	21	3	
87	5		1 9/16	125	3¼	
88	1		„	21	3¼	
85	5		„	120	3½	6 segmt.
86		10	„	20	3½	
188	2	6	„	60	3½	
187	1	8	„	40	3½	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
91		9½	1½	20	2¾	6 segmt.
92	6		"	150	2¾	
93	3	8⅛	"	92	3½	
94	1	8⅝	"	43	3½	
95	8	7½	"	216	3¾	12 segmt.
96	1	3	"	31	3¾	
97	5		"	128	3¾	8 segmt.
98		10⅛	"	21	3¾	
154	2	1	"	54	3⅜	
155	1	½	"	27	3⅜	
160	2	6	"	64	3	mortise.
161	1	2½	"	31	3	
240	10		"	252	3¾	12 segmt.
241	1		"	25	3¾	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
99	2	6	$1\frac{7}{16}$	64	4 mortise.
100	1	3	”	32	4
105	3		$1\frac{3}{8}$	81	3
106	1		”	27	3
107	1	6	”	41	$2\frac{3}{4}$
108		11	”	25	$2\frac{3}{4}$
109	1	$3\frac{1}{4}$	”	35	$2\frac{7}{8}$
110	1	$\frac{1}{8}$	”	28	$2\frac{7}{8}$
111	4		”	112	$3\frac{3}{4}$
112	1		”	28	$3\frac{3}{4}$
113	2	8	”	72	$3\frac{1}{4}$
114		8	”	18	$3\frac{1}{4}$
115	1	6	”	40	3
116	1	$3\frac{3}{4}$	”	35	3
242	1	6	”	40	3 mortise.
258	1	$2\frac{1}{2}$	”	33	3
259		$7\frac{1}{4}$	”	16	3

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
156	2	6	$1\frac{5}{16}$	72	$3\frac{1}{4}$	
157	1	3	,,	36	$3\frac{1}{4}$	
117	2	$\frac{1}{4}$	$1\frac{1}{4}$	60	$2\frac{3}{4}$	
118		$9\frac{5}{8}$	,,	24	$2\frac{3}{4}$	
119	17	9	,,	528	3	24 segmt.
120	1	2	,,	34	3	
121	5	6	,,	166	$4\frac{7}{8}$	
122		6	,,	15	$4\frac{7}{8}$	
$123\frac{1}{2}$	10	1	,,	304	3	16 segmt.
$124\frac{1}{2}$	1		,,	30	3	
$125\frac{1}{2}$	8	6	,,	126	3	16 segmt.
$126\frac{1}{2}$	1	3	,,	38	3	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
158	1	1	$1\frac{1}{4}$	32	$2\frac{1}{8}$
159		$6\frac{1}{2}$	”	16	$2\frac{1}{8}$
162	2	$1\frac{1}{4}$	”	60	$3\frac{1}{2}$
163		$5\frac{1}{2}$	”	13	$3\frac{1}{2}$
254	1	$\frac{1}{8}$	”	30	$2\frac{1}{2}$
255		$9\frac{1}{8}$	”	23	$2\frac{1}{2}$
252		10	”	30	$2\frac{1}{4}$
253		$5\frac{1}{8}$	”	15	$2\frac{1}{4}$
165	12		$1\frac{3}{16}$	404	$2\frac{3}{4}$ 16 segmt.
166	1	2	”	37	$2\frac{3}{4}$
250	1	3	”	40	$2\frac{3}{8}$
251		$6\frac{1}{8}$	”	16	$2\frac{3}{8}$

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
123	2	7½	1⅛	86	2⅜
124	1	7	”	51	2⅜
125	2		”	66	3¼
126	1		”	33	3¼
167	2	8¼	”	88	3
168		5⅞	”	16	3
243	1	2¾	”	41	2¼
244		4¼	”	12	2¼
127	2	4½	1$\frac{1}{16}$	81	3⅛
128		9½	”	27	3⅛
27	1	6½	”	54	2¾
28		9¼	”	27	2¾

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
129	2	$2\frac{1}{4}$	1	85	$2\frac{1}{2}$
130		$6\frac{1}{2}$	”	21	$2\frac{1}{2}$
169	2	$4\frac{1}{2}$	”	88	3
170		7	”	22	3
141	1	$3\frac{1}{4}$	$\frac{7}{8}$	54	$2\frac{1}{2}$
142		$7\frac{5}{8}$	”	27	$2\frac{1}{2}$
143	1	$2\frac{3}{4}$	$\frac{3}{4}$	60	$1\frac{1}{8}$
144		$4\frac{7}{8}$	”	20	$1\frac{1}{8}$

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
172		6⅞	¾	28	2¼
171	1	8½	,,	84	2¼
256	2	2	,,	108	2¼
257		6½	,,	27	2¼

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
45	3	$1\frac{3}{4}$	$4\frac{1}{2}$	26	$9\frac{1}{2}$
46	3	$2\frac{5}{8}$	$3\frac{5}{8}$	34	$9\frac{1}{2}$
3	3	10	$2\frac{3}{4}$	52	8
19	2	6	$2\frac{5}{8}$	35	7
40	3	1	,,	44	8

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
1	1	8	2½	25	5	
2	1	6½	2¼	25	5½	
28	1	10	2⅛	32	6	mortise.
33	1	10	,,	32	6	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
4	2	11⅜	2	53	4¾	
6	3	7¾	”	69	4¾	
7	2	1¼	”	40	4	
8	3		”	55	6	
9	3		”	56	6	mortise.
5	1	½	”	19	5	
41	2	6	”	47	5½	
42	2	6⅝	”	48	5½	mortise.
11	2	⅝	$1\frac{15}{16}$	40	4⅛	mortise.

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
12	1	$3\frac{1}{4}$	$1\frac{3}{4}$	27	4
13	3	4	"	71	$4\frac{1}{2}$
50	2	6	"	54	4
14	1	$\frac{1}{2}$	$1\frac{1}{2}$	26	$2\frac{7}{8}$
15	2	$5\frac{1}{2}$	"	63	$2\frac{3}{16}$
18	2		"	50	$3\frac{1}{2}$
16	1	$\frac{1}{4}$	$1\frac{7}{16}$	27	$3\frac{5}{8}$
17	1	$4\frac{3}{4}$	"	37	3

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.	
	Ft.	In.	Inches.		Inches.	
23	1	9	$1\frac{5}{8}$	39	4	
24	1	$8\frac{1}{2}$	,,	40	4	mortise.
47	1	10	,,	41	4	
20	1		$1\frac{3}{8}$	28	3	
43	1	4	$1\frac{1}{4}$	40	3	
21	1	8	,,	50	$3\frac{1}{8}$	

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
22	1	$\frac{5}{8}$	$1\frac{1}{4}$	31	$1\frac{3}{4}$
25	1	3	$1\frac{1}{8}$	42	$2\frac{1}{4}$
26	1	2	,,	39	$2\frac{1}{4}$
27	1	6	,,	50	$3\frac{1}{4}$
29	1	7	1	59	$2\frac{7}{8}$
36	1	$5\frac{3}{4}$	$\frac{15}{16}$	58	$2\frac{1}{8}$
38		10	$\frac{7}{8}$	34	$2\frac{3}{4}$

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
39		6	$\frac{7}{8}$	22	$1\frac{1}{4}$
30		9	$\frac{3}{4}$	38	$1\frac{5}{8}$
31		$8\frac{5}{8}$	,,	36	$1\frac{3}{16}$
44		$9\frac{5}{8}$	,,	40	$1\frac{3}{4}$
32	1		$\frac{1}{2}$	78	$1\frac{1}{4}$
34		$5\frac{3}{8}$	$\frac{3}{8}$	45	$\frac{5}{8}$
35		$3\frac{7}{8}$	,,	30	$\frac{5}{8}$

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
11	Rack.		11/16	53	2¼
12	Rack.		,,	53	1¾
13		4⅝	,,	21	1¾
14		2⅝	,,	12	1¾
17	Rack.		,,	53	1⅛
18		2⅝	,,	12	1¼
21	Rack.		⅝	40	1⅛
22		3⅛	,,	16	1
25	Rack.		9/16	140	2
26		3	,,	18	2¼
27	Rack.		,,	68	1½
28		4¼	,,	23	1½
47	Rack.		5/16	157	2
48		3⅞	,,	38	2

No.	Diameter.		Pitch.	No. Cogs.	Length of Cogs.
	Ft.	In.	Inches.		Inches.
45	Rack.		$\frac{3}{8}$	138	$1\frac{1}{4}$
46		$1\frac{1}{2}$	,,	12	$1\frac{1}{2}$

Diameter.		Face.	Depth.	Lbs.	
Ft.	In.	Inches.	Inches.		
4	6	2¼	3⅞		Cast-iron arms.
3	10¾	2½	3½		” ” ”
3	6	2¼	2½		” ” ”
3	3¾	3	2¼		” ” ”
3	½	1¼	1⅞	100	” ” ”
2	7¾	2	3¾	200	” ” ”
2	7⅜	2½	1⅜		” ” ”
2	6	2¾	1¼	60	” ” ”
1	5½	¾	1⅛		” ” ”
1	5⅞	½	1		” ” ”
1	2⅝	1	1½		” ” ”
1		¾	¾		” ” ”
1	¼	1⅜	Round.		” ” ”
8	1	4½	6	2800	Wrought-iron arms.

Diameter.		Lbs.		
Ft.	In.			
10		2000	Wrought-iron arms.	
9		2450	,, ,, ,,	
8		1700	,, ,, ,,	
7	2	1150	,, ,, ,,	
6	10	800	,, ,, ,,	
5		400	,, ,, ,,	
5	9	600	,, ,, ,,	
5	1	400	,, ,, ,,	
4	11¾	296	Cast-iron arms.	
4	7	260	,, ,, ,,	
4	½	209	Wrought-iron arms.	
4	½	200	Cast-iron arms.	
4		277	,, ,, ,,	
3		140	Wrought-iron arms.	
2	6	63	Cast-iron arms.	
2	4	128	Wrought-iron arms.	
2		70	,, ,, ,,	
7	6	1400	,, ,, ,,	
3	6	285	,, ,, ,,	
4		800	,, ,, ,,	
2	6	130	,, ,, ,,	
2		100	,, ,, ,,	

Diameter.		Face.	
Ft.	In.	Inches.	
2	8	$2\frac{7}{8}$	for 1 flat band.
2	$8\frac{3}{4}$	$3\frac{1}{4}$	„ 1 „ „
2	2	$2\frac{7}{8}$	„ 1 „ „
2	2	$2\frac{3}{8}$	„ 1 „ „
2	$1\frac{3}{4}$	$1\frac{3}{4}$	„ 1 „ „
1	$11\frac{1}{2}$	$1\frac{1}{8}$	„ 1 „ „
1	$10\frac{1}{2}$	$2\frac{3}{4}$	„ 1 „ „
2	$\frac{1}{2}$	$\frac{3}{4}$	5 cones for round band.
2	7	$\frac{3}{4}$	5 „ „ „ „
2	4	$\frac{3}{4}$	5 „ „ „ „
2	2	$\frac{3}{4}$	5 „ „ „ „
1	8	$\frac{3}{4}$	4 „ „ „ „

Diameter.	Thickness.		Diameter.	Thickness.
Inches.	Inches.		Inches.	Inches.
20	2¾	Arms.	7½	1¼
24	3		7½	1
15	2	Arms.	7	2
12	2¼		7	1¾
12	1¾		7	1½
11	2½		7	1¼
11	2¼		7	1
10½	2⅛		6¾	1½
10½	1¾		6½	1½
10	2		6½	1¼
10	1½		6½	1
10	1		6½	2⅛
9	2		6½	1⅞
9	1¾		6¼	1¾
9	1½		6¼	1½
9	1¼		6¼	1¼
9	1		6	2⅛
8¾	1¾		6	1¾
8	3		6	1½
8	2		6	1¼
8	1¾		6	1
8	1¼		5¾	1¼
8	1			
			5½	1½
7½	2¼		5½	1¼
7½	1¾		5½	1

Diameter.	Thickness.	Diameter.	Thickness.
Inches.	Inches.	Inches.	Inches.
5	1½	3½	⅞
5	1¼	3½	¾
5	1⅛	3¼	1
5	1	3¼	⅞
4¾	1½	3	1¼
4¾	1¼	3	1
4¾	1⅛	3	⅞
4½	2	2¾	1
4½	1¾	2¾	⅞
4½	1½	2½	⅞
4½	1¼		
4½	1⅛		
4½	1		
4¼	1½		
4¼	1¼		
4¼	1		
4	1½		
4	1¼		
4	1		
3¾	1¼		
3¾	1		
3¾	⅞		
3¾	¾		
3½	1½		
3½	1¼		
3½	1		

Diam.	Face.		Weight.	Diam.		Face.		Weight.	
Feet.	Ft.	In.		Ft.	In.	Ft.	In.		
12	2	4		6		2	4		
12	2			6		1	2		
12	1	9	6160 in halves.	6		1			
10	2	8	double band.	5		1	8	1730	wrought arms.
10	2	4		5		1		840	
10	2								
10	1	8		4			10	450	
9	1	8		3	6		8		
				3	6		6		
8	2			3		2			
8	1	8	2690	3			8		
8	1	3							
				2	8		6	250	
7	2			2	6		6	300	
7	1	6		2			6		
7	1	2							
7	1								

Diam.		Face.		Weight.	Diam.		Face.		Weight.
Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.	
4		1	4		2			4½	
4		1		400	2			3	
4			10½		1	10		6	
					1	9		9	
3	6	1			1	8¾		2½	
3	6·		10		1	8		8	
3	6		6		1	8		7	in halves.
3		2			1	8		6	
3		1	2	300 { strong arms.	1	8		4	
3			10	210	1	6	1	3	
3			8	225	1	6		8	
3			6	120	1	6		6	
3			7	in halves.	1	6		4	
2	8		6		1	6		3½	
2	9		8¼		1	5		6	
2	6	2		{ strong pattern.	1	4		9	
2	6		10		1	4		7	
2	6		7	in halves.	1	4		7	in halves.
2	6		6		1	4		6	
2	6		4½		1	4		4¼	
2	4		6		1	4		3½	
2	2		6		1	4		2	
2		1			1	3		3	
2			10		1	2⅞		2⅜	
2			8		1	2½		2⅝	
2			7	in halves.	1	2		10	
2			6		1	2		6	
2			5		1	2		4½	

Diam.		Face.		Weight.	Diam.	Face.	Weight.
Ft.	In.	Ft.	In.		Inches.	Inches.	
1	2		2 3/8		10	3	
1	1		6		10	2 5/8	
1	1		3 7/8		9 3/8	6	
1		1			9	8 1/2	in halves.
1			8		9	8 1/8	
1			7	in halves.	9	2 1/2	
1			6		8 1/4	3	
1			5		8	10	
1			4		8	6	
1			3		8	5	
1			2 3/8		7	7	
1			1 5/8		7	6	
					6 3/8	1 5/8	
	11 3/4		2 3/8		6	6	
	11		8 1/8		6	4 1/2	
	11		6		6	4	
	11		3 3/8		6	2 1/2	
	10		6		6	1 7/8	
	10		4 1/2		5	6	
	10		4		5	5	
	10		10		5	2 1/2	

NOTE. — We are fitted for making Pulleys of 6, 7, 8, 9, 10, 11, and 12 feet diameter, by sweeping up the rim, instead of the ordinary mode of moulding from a pattern, — thus saving the expense of turning the face. These Pulleys can be varied in thickness, width of rim, and weight.

Diam.	Area.	Circum.	Diam.	Area.	Circum.
¼	.049	.785	7½	44.179	23.562
½	.196	1.571	¾	47.173	24.347
¾	.442	2.356	8	50.265	25.132
1	.785	3.142	¼	53.456	25.918
¼	1.227	3.927	½	56.745	26.703
½	1.767	4.712	¾	60.132	27.489
¾	2.405	5.498	9	63.617	28.274
2	3.142	6.283	¼	67.200	29.060
¼	3.976	7.069	½	70.882	29.845
½	4.909	7.854	¾	74.662	30.630
¾	5.940	8.639	10	78.540	31.416
3	7.069	9.425	¼	82.516	32.201
¼	8.296	10.210	½	86.590	32.987
½	9.621	10.995	¾	90.762	33.772
¾	11.045	11.781	11	95.033	34.558
4	12.566	12.566	¼	99.402	35.343
¼	14.186	13.351	½	103.869	36.128
½	15.904	14.137	¾	108.434	36.913
¾	17.720	14.922	12	113.097	37.699
5	19.635	15.708	¼	117.859	38.484
¼	21.647	16.493	½	122.718	39.270
½	23.758	17.278	¾	127.676	40.055
¾	25.967	18.064	13	132.73	40.84
6	28.274	18.849	¼	137.89	41.63
¼	30.680	19.635	½	143.14	42.41
½	33.183	20.420	¾	148.49	43.20
¾	35.785	21.205	14	153.94	43.98
7	38.484	21.991	¼	159.48	44.77
¼	41.282	22.776	½	165.13	45.55

Diam.	Area.	Circum.	Diam.	Area.	Circum.
14¾	170.87	46.34	22	380.13	69.12
15	176.71	47.12	¼	388.82	69.90
¼	182.65	47.91	½	397.61	70.69
½	188.69	48.69	¾	406.49	71.47
¾	194.83	49.48	23	415.48	72.26
16	201.06	50.27	¼	424.56	73.04
¼	207.39	51.05	½	433.74	73.83
½	213.82	51.84	¾	443.01	74.61
¾	220.35	52.62	24	452.39	75.40
17	226.98	53.41	¼	461.86	76.18
¼	233.70	54.19	½	471.44	76.97
½	240.53	54.98	¾	481.11	77.75
¾	247.45	55.76	25	490.87	78.54
18	254.47	56.55	¼	500.74	79.33
¼	261.59	57.33	½	510.71	80.11
½	268.80	58.12	¾	520.77	80.90
¾	276.12	58.90	26	530.93	81.68
19	283.53	59.69	¼	541.19	82.47
¼	291.04	60.48	½	551.55	83.25
½	298.65	61.26	¾	562.00	84.04
¾	306.35	62.05	27	572.56	84.82
20	314.16	62.83	¼	583.21	85.61
¼	322.06	63.62	½	593.96	86.39
½	330.06	64.40	¾	604.81	87.18
¾	338.16	65.19	28	615.75	87.96
21	346.36	65.97	¼	626.80	88.75
¼	354.66	66.76	½	637.94	89.54
½	363.05	67.54	¾	649.18	90.32
¾	371.54	68.33	29	660.52	91.11

Diam.	Area.	Circum.	Diam.	Area.	Circum.
29¼	671.96	91.89	36½	1046.35	114.67
½	683.49	92.68	¾	1060.73	115.45
¾	695.13	93.46	37	1075.2	116.2
30	706.86	94.25	¼	1089.8	117.0
¼	718.69	95.03	½	1104.5	117.8
½	730.62	95.82	¾	1119.2	118.6
¾	742.64	96.60	38	1134.1	119.4
31	754.77	97.39	¼	1149.1	120.2
¼	766.99	98.17	½	1164.2	121.0
½	779.31	98.97	¾	1179.3	121.7
¾	791.73	99.75	39	1194.6	122.5
32	804.25	100.53	¼	1210.0	123.3
¼	816.86	101.32	½	1225.4	124.1
½	829.58	102.10	¾	1241.0	124.9
¾	842.39	102.89	40	1256.6	125.6
33	855.30	103.67	¼	1272.4	126.4
¼	868.30	104.46	½	1288.2	127.2
½	881.41	105.24	¾	1304.2	128.0
¾	894.62	106.03	41	1320.3	128.8
34	907.92	106.81	¼	1336.4	129.6
¼	921.32	107.60	½	1352.7	130.4
½	934.82	108.39	¾	1369.0	131.2
¾	948.42	109.17	42	1385.4	131.9
35	962.11	109.96	¼	1402.0	132.7
¼	975.91	110.74	½	1418.6	133.5
½	989.80	111.53	¾	1435.4	134.3
¾	1003.79	112.31	43	1452.2	135.1
36	1017.88	113.10	¼	1469.1	135.9
¼	1032.06	113.88	½	1486.2	136.7

Diam.	Area.	Circum.	Diam.	Area.	Circum.
43¾	1503.3	137.4	51	2042.8	160.2
44	1520.5	138.2	¼	2062.9	161.0
¼	1537.9	139.0	½	2083.1	161.8
½	1555.3	139.8	¾	2103.3	162.6
¾	1572.8	140.6	52	2123.7	163.4
45	1590.4	141.4	¼	2144.2	164.1
¼	1608.2	142.2	½	2164.8	164.9
½	1626.0	142.9	¾	2185.4	165.7
¾	1643.9	143.7	53	2206.2	166.5
46	1661.9	144.5	¼	2227.0	167.3
¼	1680.0	145.3	½	2248.0	168.1
½	1698.2	146.1	¾	2269.0	168.9
¾	1716.5	146.9	54	2290.2	169.6
47	1734.9	147.7	¼	2311.5	170.4
¼	1753.5	148.4	½	2332.8	171.2
½	1772.1	149.2	¾	2354.3	172.0
¾	1790.8	150.0	55	2375.8	172.8
48	1809.6	150.8	¼	2397.5	173.6
¼	1828.5	151.6	½	2419.2	174.4
½	1847.5	152.4	¾	2441.0	175.1
¾	1866.5	153.2	56	2463.0	175.9
49	1885.7	153.9	¼	2485.0	176.7
¼	1905.0	154.7	½	2507.2	177.5
½	1924.4	155.5	¾	2529.4	178.3
¾	1943.9	156.3	57	2551.8	179.1
50	1963.5	157.1	¼	2574.2	179.9
¼	1983.2	158.0	½	2596.7	180.6
½	2003.0	158.7	¾	2619.4	181.4
¾	2022.8	159.4	58	2642.1	182.2

Diam.	Area.	Circum.	Diam.	Area.	Circum.
58¼	2664.9	183.0	65½	3369.6	205.8
½	2687.8	183.8	¾	3395.3	206.6
¾	2710.9	184.6	66	3421.2	207.3
59	2734.0	185.4	¼	3447.2	208.1
¼	2757.2	186.1	½	3473.2	208.9
½	2780.5	186.9	¾	3499.4	209.7
¾	2803.9	187.7	67	3525.6	210.5
60	2827.4	188.5	¼	3552.0	211.3
¼	2851.0	189.3	½	3578.5	212.1
½	2874.8	190.1	¾	3605.0	212.8
¾	2898.5	190.9	68	3631.7	213.6
61	2922.5	191.6	¼	3658.4	214.4
¼	2946.5	192.4	½	3685.3	215.2
½	2970.6	193.2	¾	3712.2	215.9
¾	2994.8	194.0	69	3739.3	216.7
62	3019.1	194.8	¼	3766.4	217.5
¼	3043.5	195.6	½	3793.7	218.3
½	3068.0	196.3	¾	3821.0	219.1
¾	3092.6	197.1	70	3848.5	219.9
63	3117.2	197.9	¼	3876.0	220.7
¼	3142.0	198.7	½	3903.6	221.5
½	3166.9	199.5	¾	3931.4	222.2
¾	3191.9	200.3	71	3959.2	223.0
64	3217.0	201.1	¼	3987.1	223.8
¼	3242.2	201.8	½	4015.2	224.6
½	3267.5	202.6	¾	4043.3	225.4
¾	3292.8	203.4	72	4071.5	226.2
65	3318.3	204.2	¼	4099.8	227.0
¼	3343.9	205.0	½	4128.2	227.7

Diam.	Area.	Circum.	Diam.	Area.	Circum.
72¾	4156.8	228.5	80	5026.5	251.3
73	4185.4	229.3	¼	5058.0	252.1
¼	4214.1	230.1	½	5089.6	252.9
½	4242.9	230.9	¾	5121.2	253.7
¾	4271.8	231.7	81	5153.0	254.5
74	4300.8	232.5	¼	5184.9	255.3
¼	4329.9	233.3	½	5216.8	256.0
½	4359.2	234.0	¾	5248.9	256.8
¾	4388.5	234.8	82	5281.0	257.6
75	4417.9	235.6	¼	5313.3	258.4
¼	4447.4	236.4	½	5345.6	259.2
½	4477.0	237.2	¾	5378.1	260.0
¾	4506.7	238.0	83	5410.6	260.8
76	4536.5	238.8	¼	5443.3	261.5
¼	4566.4	239.5	½	5576.0	262.3
½	4596.3	240.3	¾	5508.8	263.1
¾	4626.4	241.1	84	5541.8	263.9
77	4656.6	241.9	¼	5574.8	264.7
¼	4686.9	242.7	½	5607.9	265.5
½	4717.3	243.5	¾	5641.2	266.2
¾	4747.8	244.3	85	5674.5	267.0
78	4778.4	245.0	¼	5707.9	267.8
¼	4809.0	245.8	½	5741.5	268.6
½	4839.8	246.6	¾	5775.1	269.4
¾	4870.8	247.4	86	5808.8	270.2
79	4901.7	248.2	¼	5842.6	271.0
¼	4932.7	249.0	½	5876.5	271.7
½	4963.9	249.8	¾	5910.6	272.5
¾	4995.2	250.5	87	5944.7	273.3

Diam.	Area.	Circum.	Diam.	Area.	Circum.
87¼	5978.9	274.1	93¾	6902.9	294.5
½	6013.2	274.9	94	6939.8	295.3
¾	6047.6	275.7	¼	6976.7	296.1
88	6082.1	276.5	½	7013.8	296.9
¼	6116.7	277.2	¾	7051.0	297.7
½	6151.4	278.0	95	7088.2	298.5
¾	6186.2	278.8	¼	7125.6	299.2
89	6221.1	279.6	½	7163.0	300.0
¼	6256.1	280.4	¾	7200.6	300.8
½	6291.2	281.2	96	7238.2	301.6
¾	6326.4	282.0	¼	7276.0	302.4
90	6361.7	282.7	½	7313.8	303.2
¼	6397.1	283.5	¾	7351.8	303.9
½	6432.6	284.3	97	7389.8	304.7
¾	6468.2	285.1	¼	7428.0	305.5
91	6503.9	285.9	½	7466.2	306.3
¼	6539.7	286.7	¾	7504.5	307.1
½	6575.5	287.5	98	7543.0	307.9
¾	6611.5	288.2	¼	7581.5	308.7
92	6647.6	289.0	½	7620.1	309.4
¼	6683.8	289.8	¾	7658.9	310.2
½	6720.1	290.6	99	7697.7	311.0
¾	6756.4	291.4	¼	7736.6	311.8
93	6792.9	292.2	½	7775.6	312.6
¼	6829.5	293.0	¾	7814.8	313.4
½	6866.1	293.7	100	7854.0	314.2

MEAN RESULTS OF METALS.

From experiments made by Maj. Wm. Wade for the Ordnance Department, U.S., at the South-Boston Foundry.

KIND OF METAL.	Tenacity.	Transverse Strength.	Compression.	Torsion.	Specific Gravity.
CAST-IRON. Good Common Castings	20,000	7,500		7,000	7.180
Good Iron from Gun-heads, Boston and West Point, 1848 and 1849 . .	32,000		105,000		7.280
Gun-Iron, cast in small bars	34,000	9,500	130,000	9,000	7.320
CAST-STEEL	128,000	23,000			7.846
WROUGHT-IRON begins to yield, taking a permanent set	31,000	6,500	40,000	3,600	} 7.855
Ultimate strength	57,000				
Bends and endures without breaking .			116,000	7,700	
BRONZE begins to yield, taking a permanent set . .	19,000			2,300	} 8.710
Ultimate strength	42,000				
Bends and endures without breaking .				5,500	

TESTING THE STRENGTH OF IRON AND OTHER METALS.

By means of the accurate instrument designed and constructed by Major WADE, we can determine the capacity of any metal to resist a *transverse*, *tensile*, and *torsional* pressure. Specimens furnished us of suitable size — say two inches and over — will be turned down to the size adapted to the instrument, and the result, together with the density, made known at short notice.

Weight of Cast-Iron Pipes of Different Thicknesses, from one inch to thirty-six inches bore, and one foot in length.

Bore.	Thickness	Weight.	Bore.	Thickness	Weight.
Inches.	Inches.	Lbs.	Inches.	Inches.	Lbs.
3	$\frac{3}{8}$	12.28	10	$\frac{3}{4}$	78.99
	$\frac{1}{2}$	17.15		$\frac{7}{8}$	93.24
	$\frac{5}{8}$	22.15		1	108.84
	$\frac{3}{4}$	27.56	12	$\frac{1}{2}$	61.26
4	$\frac{1}{2}$	22.05		$\frac{5}{8}$	77.36
	$\frac{5}{8}$	28.28		$\frac{3}{4}$	93.70
	$\frac{3}{4}$	34.94		$\frac{7}{8}$	110.48
5	$\frac{1}{2}$	26.94		1	127.42
	$\frac{5}{8}$	34.34	16	$\frac{1}{2}$	80.87
	$\frac{3}{4}$	42.28		$\frac{5}{8}$	101.82
6	$\frac{1}{2}$	31.82		$\frac{3}{4}$	123.14
	$\frac{5}{8}$	40.56		$\frac{7}{8}$	144.76
	$\frac{3}{4}$	49.60		1	166.60
	$\frac{7}{8}$	58.96	18	$\frac{5}{8}$	114.10
8	$\frac{1}{2}$	41.64		$\frac{3}{4}$	137.84
	$\frac{5}{8}$	52.68		$\frac{7}{8}$	161.90
	$\frac{3}{4}$	64.27		1	186.24
	$\frac{7}{8}$	76.12	20	$\frac{5}{8}$	126.33
	1	88.20		$\frac{3}{4}$	152.53
10	$\frac{1}{2}$	51.46		$\frac{7}{8}$	179.02
	$\frac{5}{8}$	65.08		1	205.80

Bore.	Thickness	Weight.	Bore.	Thickness	Weight.
Inches.	Inches.	Lbs.	Inches.	Inches.	Lbs.
22	$\frac{5}{8}$	138.60			
	$\frac{3}{4}$	167.24			
	$\frac{7}{8}$	196.46			
	1	225.38			
24	$\frac{5}{8}$	150.85			
	$\frac{3}{4}$	181.92			
	$\frac{7}{8}$	213.28			
	1	245.08			
30	$\frac{3}{4}$	226.20			
	$\frac{7}{8}$	264.79			
	1	303.86			
	$1\frac{1}{8}$	343.20			
32	$\frac{3}{4}$	240.76			
	$\frac{7}{8}$	281.94			
	1	323.49			
	$1\frac{1}{8}$	365.29			
34	$\frac{3}{4}$	255.45			
	$\frac{7}{8}$	298.88			
	1	342.88			
	$1\frac{1}{8}$	387.13			
	$1\frac{1}{4}$	431.76			
36	$\frac{3}{4}$	270.18			
	$\frac{7}{8}$	316.36			
	1	362.86			
	$1\frac{1}{8}$	409.34			
	$1\frac{1}{4}$	456.46			

Note. — These weights do not include any allowance for spigot, faucet, or flanch ends.